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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,245	05/18/2001	Keiichi Kitagawa	L9289.01138	3980

7590 02/24/2005

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EXAMINER	
HUANG, WEN WU	
ART UNIT	**PAPER NUMBER**
2682	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/856,245	KITAGAWA ET AL.	
	Examiner	Art Unit	
	Wen Huang	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18,19,29 and 30* is/are allowed.

6)☒ Claim(s) *16,20 and 22-28* is/are rejected.

7)☒ Claim(s) *17 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-15 are canceled.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16, 20, 22, 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kleider et al (US. 6,240,282) in view of Sklar (IEEE Communication Magazine, July 1997).

Regarding claim 16, Kleider et al teach a transmitting apparatus (see Kleider et al, fig. 13, component 114) used in a mobile communication system to transmit a signal by radio to a communicating party (see Kleider et al, fig. 13, components 116 and 118), the transmitting apparatus comprising:

a symbol rate determiner that determines a symbol rate of a transmitting signal (see Kleider et al, fig. 13, component 312, col. 19, lines 57-58 and 61-65) based on a channel condition between transmission and reception of a received signal (see Kleider et al, col. 19, line 66- col. 20, line 1); and

a transmitter that transmits data by radio (see Kleider et al, fig. 3, component 114) inherently based on said determined symbol rate (see Kleider et al, fig. 3, components 304, 306, and 312; and col. 19, lines 61-65).

Kleider et al fail to teach that wherein said symbol rate based on a channel variation speed between transmission and reception of a received signal and said symbol rate being made greater in response to an increase in the channel variation speed so as to make a channel variation between symbols or in a burst relatively minute.

Sklar teaches a symbol rate based on a channel variation speed between transmission and reception of a received signal (see Sklar, page 102, first col., lines 6-8) and said symbol rate being made greater in response to an increase in the channel variation speed (see Sklar, page 106, first col., under "MITIGATION TO COMBAT FAST-FASTING DISTORTION", fourth and fifth lines) so as to make a channel variation between symbols relatively minute (see Sklar, page 103, first col., lines 21-25).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Kleider et al and the teaching of Sklar in order to improve communication quality and mitigate channel fading.

Regarding claim 20, Kleider et al as modified by Sklar teach the transmitting apparatus according to claim 16, further inherently comprising a carrier wave frequency controller (see Kleider et al, col. 21, line 47; the term "new LO value" indicates the inherent local oscillator frequency controller) that controls a central frequency of a

carrier wave (by a process of frequency mixing, a carrier wave is produced by mixing a local frequency with a intermediate frequency wherein the local frequency is the central frequency of the carrier wave) based on the determined symbol rate (see Kleider et al, col. 21, lines 38-46).

Regarding claim 22, Kleider et al as modified by Sklar teach the transmitting apparatus according to claim 16, wherein said symbol rate determiner extracts information about a symbol rate (see Kleider et al, fig. 13, component 220, col. 20, lines 14-15) from a signal transmitted from the communicating party (see Kleider et al, col. 21, lines 8-12).

Regarding claim 23, Kleider et al as modified by Sklar teach a receiving (see Kleider et al, fig. 13, component 118) apparatus comprising:

a receiver (see Kleider et al, fig. 13, component 118) that extracts received data from a signal transmitted from the transmitting apparatus of claim 22 (see Kleider et al, fig. 13, component 114);

a channel variation estimator that estimates a channel variation based on the received data (see Kleider et al, fig. 13, component 236);

a symbol rate determiner that determines a symbol rate based on the estimated channel variation (see Kleider et al, fig. 13, component 312); and

a transmitter that transmits a signal indicative of the determined symbol rate to said transmitting apparatus (see Kleider et al, fig. 13, component 114, col. 21, lines 8-12).

Regarding claim 27, Kleider et al as modified by Sklar also teach a communication terminal apparatus (see Kleider et al, fig. 13, component 300) having a receiving apparatus (see Kleider et al, fig. 13, component 118, col. 21, lines 3-14), said receiving apparatus comprising:

a receiver (see Kleider et al, fig. 13, component 118) that extracts received data from a signal transmitted from the transmitting apparatus of claim 22 (see Kleider et al, fig. 13, component 114);

a channel variation estimator that estimates a channel variation based on the received data (see Kleider et al, fig. 13, component 236);

a symbol rate determiner that determines a symbol rate based on the estimated channel variation (see Kleider et al, fig. 13, component 312); and

a transmitter (see Kleider et al, fig. 13, component 114) that transmits a signal indicative of the determined symbol rate (see Kleider et al, fig. 13, component 318) to said transmitting apparatus (see Kleider et al, fig. 13, component 114, col. 21, lines 3-14).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kleider et al and Sklar as applied to claim 16 above, and further in view of Frodigh et al (US. 5,909,469).

Regarding claim 25, Kleider et al as modified by Sklar teach a receiving apparatus (see Kleider et al, fig. 13, component 118, col. 21, lines 3-14), said receiving apparatus comprising:

a receiver (see Kleider et al, fig. 13, component 118) that extracts received data from a signal transmitted from the transmitting apparatus of claim 22 (see Kleider et al, fig. 13, component 114);

a channel variation estimator that estimates a channel variation based on the received data (see Kleider et al, fig. 13, component 236);

a symbol rate determiner that determines a symbol rate based on the estimated channel variation (see Kleider et al, fig. 13, component 312); and

a transmitter that transmits a signal indicative of the determined symbol rate to said transmitting apparatus (see Kleider et al, fig. 13, component 114, col. 21, lines 8-12).

Kleider as modified by Sklar fail to teach a base station apparatus having said receiving apparatus.

Frodigh et al teach a base station (see Frodigh et al, fig. 6, component 20, col. 8, line 15) apparatus having a receiving apparatus (see Frodigh et al, fig. 7, component 87, col. 8, lines 33-34).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Frodigh et al with the teaching of

Kleider et al and Sklar in order to incorporate said transmitting apparatus into a cellular communication infrastructure.

Claim 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh et al in view of Kleider et al and Sklar.

Regarding claim 24, Frodigh et al teach a base station apparatus (see Frodigh et al, fig. 6, component 20, col. 8, line 15), used in a mobile communication system, having a transmitting apparatus that transmits a signal to a communicating party (see Frodigh et al, fig. 7, component 86, col. 8, lines 33-34).

Frodigh et al fail to teach said transmitting apparatus comprising:

a symbol rate determiner that determines a symbol rate of a transmitting signal based on a channel variation speed between transmission and reception of a received signal, said symbol rate of the transmitting signal being made greater in response to an increase in the channel variation speed; and

a transmitter that transmits data by radio based on said determined symbol rate.

Kleider et al teach a transmitting apparatus (see Kleider et al, fig. 13, component 114) used in a mobile communication system to transmit a signal by radio to a communicating party (see Kleider et al, fig. 13, component 116), the transmitting apparatus comprising:

a symbol rate determiner that determines a symbol rate of a transmitting signal (see Kleider et al, fig. 13, component 312, col. 19, lines 57-58 and 64-65) based on a

channel condition between transmission and reception of a received signal (see Kleider et al, col. 16, line 66- col. 17, line 1); and

a transmitter that transmits data by radio (see Kleider et al, fig. 3, component 114) inherently based on said determined symbol rate (see Kleider et al, fig. 3, components 304, 306, and 312; and col. 19, lines 61-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Frodigh et al with the teaching of Kleider et al in order to incorporate said transmitting apparatus into a cellular communication infrastructure.

Frodigh et al and Kleider et al fail to teach that wherein said symbol rate based on a channel variation speed between transmission and reception of a received signal and said symbol rate being made greater in response to an increase in the channel variation speed.

Sklar teaches a symbol rate based on a channel variation speed between transmission and reception of a received signal (see Sklar, page 102, first col., lines 6-8) and said symbol rate being made greater in response to an increase in the channel variation speed (see Sklar, page 106, first col., under "MITIGATION TO COMBAT FAST-FASTING DISTORTION", fourth and fifth lines).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Frodigh et al and Kleider et al with the teaching of Sklar in order to improve communication quality and mitigate channel fading.

Regarding claim 26, Frodigh et al teach a communication terminal apparatus (see Frodigh et al, fig. 5, col. 6, lines 57-58), used in a mobile communication system, having a transmitting apparatus that transmits a signal to a communicating party (see Frodigh et al, fig. 5, component 36, col. 6, line 58).

Frodigh et al fail to teach said transmitting apparatus comprising:

a symbol rate determiner that determines a symbol rate of a transmitting signal based on a channel variation speed between transmission and reception of a received signal, said symbol rate of the transmitting signal being made greater in response to an increase in the channel variation speed; and

a transmitter that transmits data by radio based on said determined symbol rate.

Kleider et al teach a transmitting apparatus (see Kleider et al, fig. 13, component 114) used in a communication system to transmit a signal by radio to a communicating party (see Kleider et al, fig. 13, component 116), the transmitting apparatus comprising:

a symbol rate determiner that determines a symbol rate of a transmitting signal (see Kleider et al, fig. 13, component 312, col. 19, lines 57-58 and 64-65) based on a channel condition between transmission and reception of a received signal (see Kleider et al, col. 16, line 66- col. 17, line 1); and

a transmitter that transmits data by radio (see Kleider et al, fig. 3, component 114) inherently based on said determined symbol rate (see Kleider et al, fig. 3, components 304, 306, and 312; and col. 19, lines 61-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Frodigh et al with the teaching of Kleider et al in order to incorporate said transmitting apparatus into a cellular communication infrastructure.

Frodigh et al and Kleider et al fail to teach that wherein said symbol rate based on a channel variation speed between transmission and reception of a received signal and said symbol rate being made greater in response to an increase in the channel variation speed.

Sklar teaches a symbol rate based on a channel variation speed between transmission and reception of a received signal (see Sklar, page 102, first col., lines 6-8) and said symbol rate being made greater in response to an increase in the channel variation speed (see Sklar, page 106, first col., under "MITIGATION TO COMBAT FAST-FASTING DISTORTION", fourth and fifth lines).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Frodigh et al and Kleider et al with the teaching of Sklar in order to improve communication quality and mitigate channel fading.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frodigh et al in view of Sklar.

Regarding claim 28, Frodigh et al teach a transmitting method used in a mobile communication system to transmit a signal by radio to a communicating party (see Frodigh et al, col. 6, lines 55-56), the method comprising:

detecting a channel variation speed between transmission and reception of a received signal (see Frodigh et al, col. 6, lines 45-50).

Frodigh et al fail to teach that further comprising:

increasing a symbol rate of a transmitting signal in response to an increase in said channel variation speed.

Sklar teaches that comprising:

increasing a symbol rate of a transmitting signal in response to an increase in said channel variation speed (see Sklar, page 106, first col., under "MITIGATION TO COMBAT FAST-FASTING DISTORTION", fourth and fifth lines).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Frodigh et al and the teaching of Sklar in order to improve communication quality and mitigate channel fading.

Allowable Subject Matter

Claims 17 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 18, 19, 29 and 30 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 17, Frodigh et al, Kleider et al, and Sklar fail to teach the transmitting apparatus according to claim 16, wherein said symbol rate determiner determines the symbol rate such that a product of a transmitting time and a channel variation speed per symbol maintains a constant value.

Regarding claim 21, Frodigh et al, Kleider et al and Sklar fail to teach the transmitting according to claim 16, wherein said transmitter transmits a signal only in a period of a high received signal level.

Regarding claim 18, Frodigh et al, Kleider et al and Sklar fail to teach a transmitting comprising a symbol rate determiner that determines a symbol rate based a relative delay time of multipaths.

Regarding claim 19, Frodigh et al, Kleider et al and Sklar fail to teach a transmitting comprising a symbol rate determiner that determines a symbol rate based a delay profile.

Regarding claim 29, Frodigh et al, Kleider et al and Sklar fail to teach a transmitting method comprising determining a symbol rate from relative delay times of multipaths.

Regarding claim 30, Frodigh et al, Kleider et al and Sklar fail to teach a transmitting method comprising determining a symbol rate from a delay profile.

Response to Arguments

Applicant's arguments with respect to claims 16, 20 and 22-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen Huang whose telephone number is (703) 305-6285. The examiner can normally be reached on 10am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

wwh
2-18-05

LEE NGUYEN
PRIMARY EXAMINER